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Combat Crew

strategic air command

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June 1977

Combat Crew

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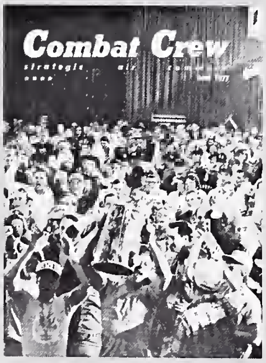

ON OUR COVER

The Whiteman Minuteman missile wing, commanded by Col Clifford D. Cork, captured eight awards at this year's annual missile combat competition in May. This is the third year Whiteman has won the title Best of the Best.

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FLARE

We in Strategic Air Command have been in the deterrence business — and specifically the nuclear deterrence business — since the command was created in 1946. You might say that our job is one of motivation — we attempt, through the strength of our strategic forces, to motivate the people of the world to look for means other than armed conflict to solve their differences.

As we now engage in arms limitations talks and negotiations, the quantitative balance in the strategic business is being defined and sized. As these numbers take shape, it is apparent that our future strength will be measured and perceived against these definitions — measured and perceived not only by our potential adversaries, but of equal importance, by our allies, by Third World nations and by our own people.

The strategic future will be significantly affected by the success or lack of success of the SAL talks. The Vladivostok understanding limits each side to a total of 2400 strategic offensive delivery systems, with a sub-limit of 1320 MIRVs. From the standpoint of the total strategic nuclear inventory, including missiles (ICBMs and SLBMs) and bombers, projected trends indicate a U.S. lead in numbers of warheads with a Soviet advantage in

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THE STRATEGIC BALANCE

Lt General James M. Keck
SAC Vice Commander in Chief

megatons and throw weight.

The quantitative asymmetries in favor of the Soviets are now partially offset by the qualitative advantages of our systems. Additionally, our SAC missile and bombardment crew proficiency is another area within which we have an edge. But these are neither "given" U.S. advantages nor can we be certain that they will continue. Therefore, even if the Vladivostok understanding is adopted in an agreement, a reordering on both sides may be necessary if a perceived balance is to be maintained. In the case of the Soviets, they will have to reduce forces to the agreed level. In the case of the U.S., we may have to build forces up to the agreed level depending on the prevailing situation.

If we end up without a formal agreement, we could find ourselves in a true, classic strategic arms race to reach and maintain levels achieved by potential adversaries. A third possibility might be a tacit understanding — a hold in place — with each participant maintaining the balance without a fixed limit.

One of the few verities of war is that they are unpredictable. To counter this unpredictability, we need the most flexible weapons systems our technology can produce. We have no way of knowing what manner of conflict we might next become involved in over any considered time span. Therefore, the better we are able to fight them all, the less need we will have to fight any.

In any event, under any foreseeable circumstances, it is apparent that the desired balance can only be assured by obtaining the best ICBM, the finest submarine and SLBM, and the most advanced bomber our technology can produce. The emphasis of the future will be on quality and efficiency. Force improvements and force modernization will be the key if we are to keep pace. Should force levels decrease, the need for quality will increase.

Hopefully, the confluence of escalating weapons costs and effects, coupled with increased human needs and technological precision, will finally provide mankind the opportunity to control the arms which may otherwise some day consume him. Careful, intelligent choices now will allow us at best to live free in a world where reason prevails over force. Careless choices may signal a significant altering of the structure of the world as we know it. It is hoped that our choices will be guided with wisdom and objectivity. ★★★

351st SMW WINS . . .

OLYMPIC ARENA '77

The 1977 SAC Missile Combat Competition, held April 27 through May 6 at Vandenberg AFB, included competitors from each of SAC's nine missile wings competing for awards of distinction for themselves and their units. The top award, SAC's Blanchard Trophy, went to the 351st Strategic Missile Wing as the "Best in SAC" missile wing for 1977.

And so for the third time in the 10-year history of the Strategic Air Command Missile Combat Competition, the prestigious Blanchard Trophy will reside with the 351st SMW, Whiteman AFB. Their win came after six days of intensive competition among the nine Minuteman and Titan II intercontinental ballistic missile wings; they landed top honors for an unprecedented third time by amassing 5420 points out of a possible 6000 to win Olympic Arena '77.

Winning Best Titan II wing honors was the 390th SMW, Davis-Monthan AFB. The Arizona wing finished in second place overall, trailing the winner by only seven points.

The Whiteman competitors dominated two of the three areas of Olympic Arena competition — operations and maintenance. In addition to the Blanchard, they take back to Missouri the trophies for Best Minuteman Wing, Best Operations, Best Minuteman Crew, Best Minuteman Missile Handling Team, Best Civil Engineering Team, Best Minuteman Environmental Team, and Best Minuteman Electronics Team. They also garnered the Air Force Association's award for Best Minuteman Operations.

In addition to their standings as top Titan II wing, the Davis-

The cries of victory rang out after the 351st Strategic Missile Wing, Whiteman AFB, won the coveted Blanchard Trophy in the Strategic Air Command's 1977 Missile Combat Competition.

Monthan AFB unit won the awards for Best Crew, Best Titan II Crew, Best Titan II Propulsion Team, Best Titan II Munitions Maintenance Team, Best Titan II Security Police Team, Best Titan II Missile Communication Control System Team, Best Titan II Refrigeration Team, Best Single Crew Exercise, and the Air Force Logistics Command Best Titan Logistics Trophy.

The 91st SMW, Minot AFB, won two categories of competition, finishing third overall. They won Best Minuteman Security Police Team and Best Security Police Team.

The 321st SMW, Grand Forks AFB, placed fourth overall, taking the award for Best Minuteman Munitions Team.

The 381st SMW, McConnell AFB, placed fifth overall, taking awards for Best Titan II Real Property Installed Equipment Team and Best Titan II SAC Automated Command and Control Systems Maintenance Team.

The 341st SMW, Malmstrom AFB, placed sixth in the competition and won Best Maintenance Team, Best Minuteman Munitions Maintenance Team. Best Munitions Maintenance Team, Best Minuteman Mechanical Team and the Air Force Logistics Command Best Minuteman Logistics Trophy.

The 44th SMW, Ellsworth AFB, took seventh place and won Best Minuteman Site Security Maintenance Team, Best Communications Team, Best Minuteman Missile Communication Control System Team, and Best Minuteman SAC Automated Command and Control Systems Maintenance Team.

The 90th SMW, F. E. Warren AFB, placed eighth in the competition and won Best Minuteman Facilities Maintenance Team, Best Vehicle Support Team, and Best Minuteman Vehicle Support Team. The 308th SMW, Little Rock AFB, placed ninth and won Best Titan II Pneudraulics Team, Best Titan II Propellant Transfer Team, Best Titan II Munitions Team, Best Titan II Electronics Team, Best Titan II Vehicle Support Team and the Air Force Association's award for Best Titan II Operations.

SAC officials reported, "Olympic Arena is designed to recognize the proficiency and readiness of the U. S. ICBM force, to promote an exchange of professional information and to refine, wherever possible, present procedures and techniques." It also promotes an exchange of professional information between SAC missile personnel, and enhances esprit de corps throughout the SAC ICBM force.

Titan II units competing this year were the 308 SMW from Little Rock AFB, the 381 SMW from McConnell AFB, and the 390 SMW from Davis-Monthan AFB.

Minuteman wings competing were the 44 SMW from Ellsworth AFB; the 351 SMW from Whiteman AFB, the 90 SMW from F. E. Warren AFB, the 91 SMW from Minot AFB, the 321 SMW from Grand Forks

A1C Martin W. Beaver, 351st Missile Handling Team, spots for the huge transporter-erector used to remove and transport Minuteman missiles.

’77

AFB, and the 341 SMW from Malmstrom AFB.

Olympic Arena 77, the nickname for the annual SAC Missile Combat Competition, was the tenth missile competition since the event originated in 1967. The first year the missile competition was called “Curtain Raiser,” and for that time in the history of the missile force, the best launch crews and maintenance teams in the command came together to compete for the top missile award. The 351 SMW bested the other eight missile units that year and took the Blanchard Trophy to Whiteman.

Because of command-wide operational commitments in Southeast Asia, the missile competition was not held in 1968. However, the framework for the 1969 missile competition was being constructed during that time and in 1969, the missile competition, now called Olympic Arena, was resumed. The year layoff intensified rather than lessened the competitive spirit, and that year the 321 SMW from Grand Forks took top honors.

Other winners have included:

1970	**44 SMW, Ellsworth AFB**
1971	**351 SMW, Whiteman AFB**
1972	**381 SMW, McConnell AFB**
1973	**90 SMW, F. E. Warren AFB**
1974	**321 SMW, Grand Forks AFB**
1975	**381 SMW, McConnell AFB**
1976	**341 SMW, Malmstrom AFB**

For a look at the competitors and highlights of the competition, see photo view on page 20.

Lt General James M. Keck, vice commander in chief of the Strategic Air Command, opened the tenth renewal of Olympic Arena.

Speaking to an audience of missilemen and their guests, he stressed the great value of these competitions.

“We’re the only counterweights to the strength of the Soviet Union, and how well are we doing? Well, I can assure you that quantitatively by any measurement the Soviets are ahead of us. They have more than we have. They have more men and women under arms. They have more of just about anything than we have.

“But I can also assure you that qualitatively we’re better. We’re better. We have better hardware but most especially we have better people. Our better more than counterbalances their more and that’s why we do have essential equivalence today. And it’s our better that we have to maintain; it’s not given, we have to work at it. We have to strive for it.

“And that’s why we have competitions like this. Because we constantly want to be better. Because if we’re not better, they will probably outweigh us in their more and we will have to take a second place, and we can’t afford this as a nation.”

THE 41st IS TOPS

The General Carl A. Spaatz Memorial Air Refueling Trophy has been awarded to the 41st Air Refueling Squadron, Griffiss AFB, as "Best Tanker Squadron in the Strategic Air Command."

Colonel George P. Tynan, 416th Bomb Wing commander and Lt Col Dan Dailey, 41st Air Refueling Squadron, bring the General Spaatz Trophy home to Griffiss AFB.

The 41st ARS, commanded by Lt Col Dan G. Dailey, beat out 34 other SAC tanker squadrons to win the coveted Refueling trophy. It was also recognized as the best air refueling squadron in the Air Force, since SAC's tanker units refuel aircraft of all major air commands.

This famous, four-foot high trophy was donated and presented by the Tactical Air Command to SAC in recognition for "the outstanding support TAC fighter pilots receive from SAC's KC-135 tanker refueling crews." The trophy memorializes General Carl A. "Tooey" Spaatz, first Chief of Staff of the United States Air Force, whose exploits and early vision pioneered air refueling of military aircraft.

The citation accompanying the award states, . . . "The 41st Air Refueling Squadron distinguished itself from January 1, 1976 to December 31, 1976, by providing air refueling support to all major air commands, and establishing a 17-year accident free flying record. The results attained during the Buy None, Operational Readiness Inspection and 1st Combat Evaluation Group visit set this squadron apart from all others."

During 1976, the 41st AREFS flew 1,028 sorties, piling up 5,500 hours of flying time. The squadron additionally supported six major air commands and successfully completed four higher headquarters directed evaluations. Actually, squadron crews flew 444 sorties in support of 231 higher headquarters directed missions for major commands.

The 19 crews covered the globe from Australia to Iceland and from

Alaska to Spain. They supported 22 tanker task force operations throughout the world by deploying to 16 air bases, flying over 180 sorties delivering nearly 4 million pounds of fuel.

Participating in 236 SAC special command missions, the 41st crews flew in Operation Snowtime, refueling planes taking part in a mock penetration attack. Other noteworthy missions were refueling the "Looking Glass" airborne command post; B-52 bombers on sea reconnaissance and surveillance missions and the B-1 bomber, under flight testing to perfect its air-to-air refueling and rendezvous procedures.

Some 150 missions were flown supporting the Tactical Air Command. 41st tanker crews were involved in Bold Eagle, a Joint Chief of Staff exercise in the Southwest United States; in a South Pacific area for a joint United States, New Zealand and Australian exercise; and a special refueling mission for the United States Commander-in-Chief, Europe.

Members of the 41st also found themselves refueling hundreds of TAC fighter aircraft on deployment exercises. Additionally, they participated in 16 missions, ferrying F-4s, F-14s, F-111s, RF-4s and F-15 aircraft to various Air Force bases throughout Europe.

For the Military Airlift Command, 41st crews refueled C-5A Galaxy aircraft, increasing the range of strategic airlift cargo planes to countries in Europe and Asia. They refueled nine operational missions, which involved overwater rendezvous, negating the use of airborne radar as an aid to navigation. By providing precision navigation through celestial observations, 41st navigators met a challenge not commonly demanded of KC-135 crews.

The 41st AREFS was selected as the KC-135 tanker unit to escort and provide air refueling support for the first YC-15 to fly across the Atlantic. The deployment with this experimental aircraft involved meticulous pre-mission planning by the tanker crew, since long range fuel requirements for an ocean crossing by a YC-15 were not known. The YC-15 did need more fuel so the advance planning paid off and the transoceanic trip was successful.

With the 416th Bomb Wing becoming an advisor for the 171st Air Refueling Air National Guard Wing at Greater Pittsburgh International Airport, the 41st developed an aircrew training program for ANG pilots and is now providing the training and instructor assistance to the 171st.

During 1976, 41st crews flew 839 sorties amassing 4,360 accident-free hours. The squadron holds a 17-year, accident-free, flying safety record due to its crews' superior knowledge of aircraft systems and their professionalism.

Higher headquarters inspections of the 41st AREFS rated them high in squadron leadership and crew morale, with meticulous accomplishment of their additional duties.

The April 1976 Buy None flying capability inspectors praised all crews for launching their KC-135s on schedule and making 100 per cent effective refuelings.

At the conclusion of the Operational Readiness Inspection (ORI) in September 1976, inspectors reported, "Flight training was excellent. Tanker aircraft generation, mission effectiveness and aircrew testing were outstanding." During this inspection, the 41st AREFS set the pace within the 416th Bomb Wing and the wing established the standard, command-wide, for ORI excellence in 1976.

After the November 1976 inspection by the 1st Combat Evaluation Group, with the 41st achieving an outstanding rating, Brig. Gen. Jack L. Watkins, 45th Air Division commander, wrote to the 41st commander, "I know 41st crews spent many overtime hours preparing for the checkrides. Congratulations on your numerous excellent and outstanding ratings, which I note with great pleasure."

During 1976, six tanker crews developed training plans for 70 courses as a KC-135 tanker ground training program. They then taught these courses so effectively that SAC has implemented this program command-wide during 1977.

Col. George P. Tynan, 416th Bomb Wing commander, praised the 94-member air refueling squadron for its outstanding accomplishments, saying, "The dedication, can-do professional attitude and esprit de corps possessed by the 41st AREFS is unsurpassed in SAC. Their demonstrated ability to excel at any task is a direct result of their leadership, dedication and mission oriented attitude. No other unit in SAC is more deserving of this coveted trophy than the 41st."

Constituted on August 22, 1958 and assigned to the Strategic Air Command for activation, the 41st Air Refueling Squadron was assigned to the 4039th Strategic Wing (now 416th Bomb Wing) at Griffiss AFB, N.Y. on Jan. 5, 1959. Their first KC-135 Stratotanker arrived from Castle AFB, Calif. on April 17, 1959 and was christened "The City of Rome", in honor of citizens of the nearby city, who had expressed so much interest and extended such a warm welcome to the wing.

Very early in its history the squadron received the "Gold Band" award for air refueling efficiency for three consecutive quarters. They received the Eighth Air Force Golden Boom award for outstanding refueling from January-June 1963. In 1965 they won the Lt. Col. George M. Broutsas Memorial Trophy for the year 1965, the Eighth Air Force Golden Boom Award for July-December 1965 and the 6th Air Division's Outstanding Performance Award for July-December 1965.

On April 21, 1965 one tanker and two crews departed for Southeast Asia in support of the 416th Bomb Wing's first Young Tiger mission. Throughout the rest of 1965, 1966, 1967 and into 1968, at least one tanker and one crew were on 60-day temporary duty on "Young Tiger" operations in SEA.

As the Vietnam War stepped up as many as four KC-135s and six crews were sent over each quarter. The number of exercises picked up considerably in the 1970's and were intensified during the final Lineback II bombings.

NIGHT RESCUE and maybe you!!

Capt Donald R. Backlund
1551 Flying Training Squadron
Kirtland AFB

Late afternoon. Not the best time to try hitching a ride home from enemy territory, you think, as you hurriedly gather up your chute and harness and conceal them in some nearby underbrush. It will be dark soon and, even if the Rescue helicopter was on station, it would never be able to get here before nightfall.

At least you were able to nurse the bird away from the gun that did the damage before you bailed out, and the parachute ride provided you an opportunity to survey the surrounding terrain.

A short talk with your wingman on the radio and now you are alone, deep inside enemy territory, and a long way from home. As you struggle up the ridgeline, your mind searches for the important characteristics of the good evasion shelter that you learned in snake school.

Hopefully, no one saw you come down; but if they did, that road means easy access for search teams. They'll be looking for you. They'll probably have dogs, and you know what that means — certain capture or worse. If only you can hide until the SANDIES (A-1E close air support aircraft) show up at daylight.

Sounds like a discouraging situation? Things might not be as bad as they seem. Crews of the Aerospace Rescue and Recovery Service (ARRS), flying H-53s modified with the Night Recovery System (NRS), have the capability to locate and recover downed aircrews on the darkest of nights. This capability was developed in response to operational requirements identified early in the Southeast Asia conflict. It was obvious that some aircrews were not being recovered because search and rescue (SAR) efforts were limited almost entirely to daylight operations. The longer a downed aircrewman remains on the ground, the higher the probability of his capture.

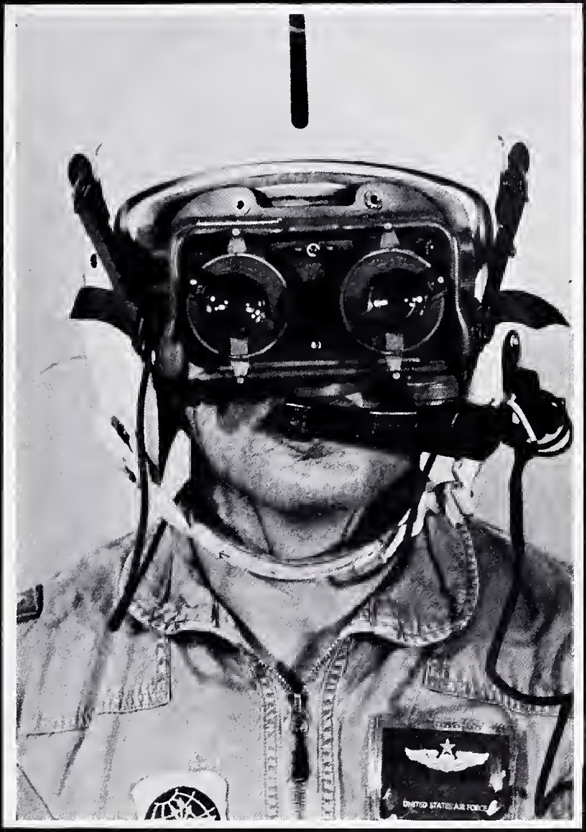
To solve the night SAR problem, the front-line H-53 rescue helicopter was modified with off-the-shelf components. A Low Light Level Television (LLLTV) system, similar to that used by the AC-130 Gunship, was installed for night navigation and survivor location. The LLLTV produces a picture closely resembling a daylight TV picture of a selected area in front of and below the helicopter under even the darkest night conditions.

Approach and hover couplers, integrated with the H-53s Doppler navigation system and radar altimeter, provide precise aircraft control during the actual recovery phase. Night Vision Goggles (NVGs), mounted on their flying helmets, allow the hoist operator and pararescuemen to "see in the dark" during the recovery.

Combined with the Electronic Location Finder (ELF) equipment, which utilizes the Course Deviation Indicator (CDI) to display steering and hover guidance in reference to a survival radio, the NRS gives ARRS forces the capability to perform successful night SAR under Visual Flight Rules (VFR) conditions.

The mission capability of the HH-53C, with an unrefueled range of approximately 500 miles, can be enhanced for night SAR by utilizing air refueling from HC-130 tankers. This gives a deployment capability and operational range limited primarily by crew endurance. Although the NRS system gives the HH-53C a limited capacity to terrain mask, no automatic terrain avoidance equipment is provided, so night VFR conditions are required for successful system employment.

A typical NRS recovery might run something like this: With either a known survivor location or confirmed bailout position as its destination, the NRS equipped helicopter navigates through enemy territory at a safe altitude determined by the crew from intelligence reports, to evade en route enemy weapons. Upon arrival in the survivor's area, both visual and electronic techniques can be used to pinpoint the survivor's location, which is then stored in the Doppler computer.



Aircrewman with flying helmet wearing the night vision goggles.

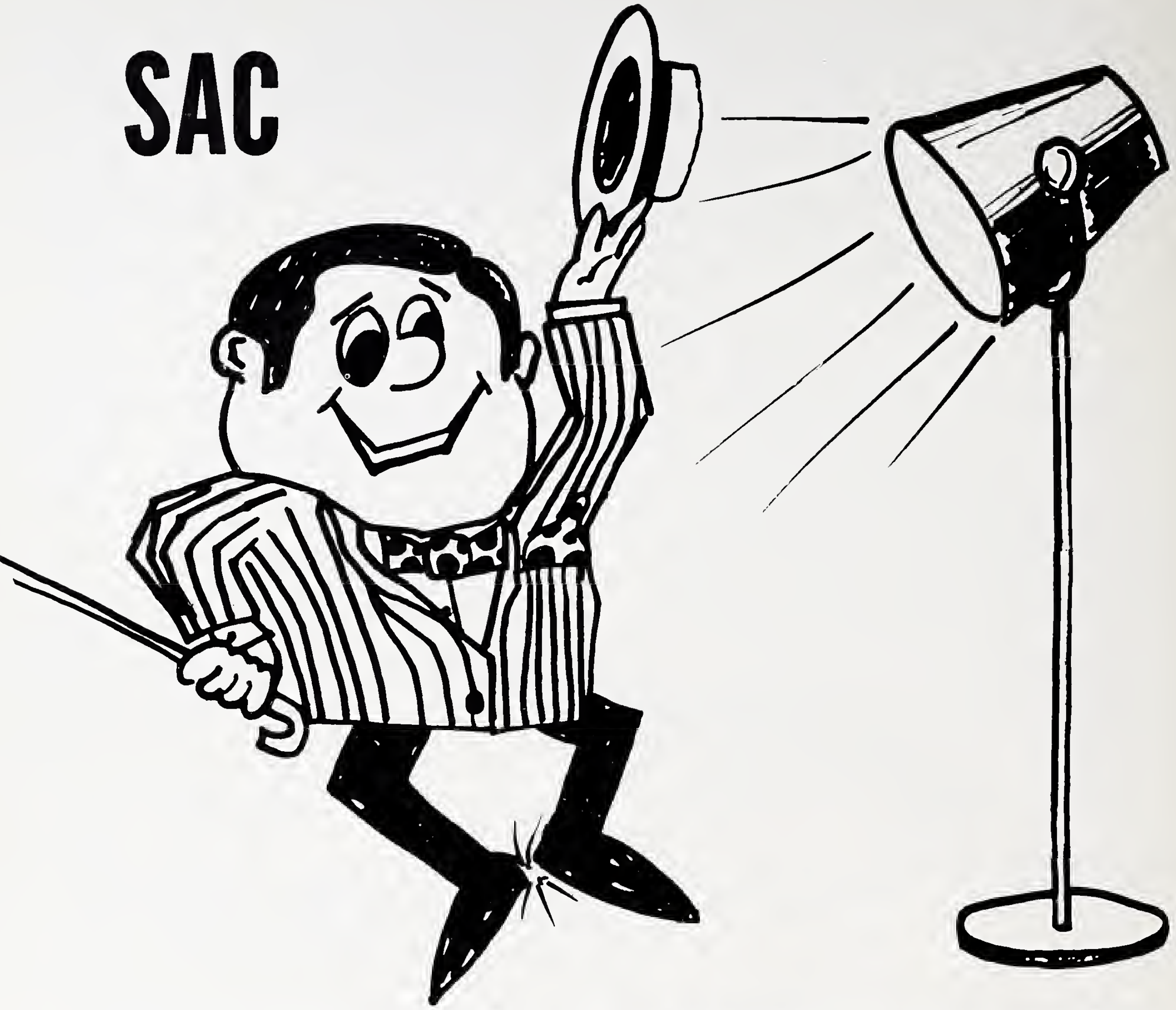
The NRS system automatically hovers the helicopter, with pilot inputs based on LLLTV and ELF information, and positions the aircraft precisely over the survivor so the hoist operator and pararescuemen can complete the pickup. After the survivor is aboard, the helicopter will depart the area on the safest possible route.

Although the term "automatic" is attached to some of the equipment and procedures, there is nothing really automatic about an NRS pickup. Night SAR is an extremely complex operation for the helicopter crew and, perhaps even more than during daylight SAR, the survivor must play an integral part.

What can you do to increase the probability of a successful recovery should you be unlucky enough to be the object of an NRS SAR effort? First, you should regularly check your survival equipment for completeness and proper operation. The distress beacon strobe light with its blue infrared cover and

Continued on page 24

SAC



SPOTLIGHT SHINES AGAIN!

The SAC SPOTLIGHT program was instituted in 1970 to provide outstanding combat crewmembers the opportunity to serve a one-year MAJCOM/NAF tour of duty early in their career. Patterned after the Air Staff Training program (ASTRA), this career broadening assignment was designed to enhance the SPOTLIGHTER's knowledge of MAJCOM/NAF level activities, and, in turn, provide program participants with the experience and knowledge to function more effectively on future assignments. Adopted by several MAJCOMs, this program operated under its original charter for four years.

In 1974, limited PCS funds and MAJCOM manning restrictions required a revision in the philosophy of the SPOTLIGHT program to insure its continuation. The SPOTLIGHT tour length was changed to two years with program emphasis primarily on job performance. While the selected officers received valuable experience as SPOTLIGHTERs, some limitations became apparent. Many were functioning in only one position during their entire tour, thereby limiting exposure to headquarters activities. Additionally, the SPOTLIGHTERS were at a disadvantage when it came to effectiveness ratings, because they were manning staff positions for which they had little or no qualifications. After a thorough reexamination of the program in 1976, permission was granted by AF/DP to restructure the program to more closely parallel ASTRA, both in purpose and in administration.

Effective 1 Oct 77, SAC SPOTLIGHT will

change to a one-year tour of duty. Ten SPOTLIGHT officers will be selected annually with assignment to a training position in one of the following SAC Headquarters deputates: HQ SAC AC, AD, DP, DO, LG, XO, XO, IN.

To insure SPOTLIGHTERs receive maximum exposure to their assigned deputates, DCSs will be encouraged to allow them to work in as many functional areas as possible with primary emphasis on training and career broadening. Upon completion of the 12-month tour, performance will be documented on an AF Form 475 (Training Report) as opposed to an OER. Unlike ASTRA, SPOTLIGHTERs, after 12 months experience, may be offered the opportunity to remain at the headquarters in a position for which they have the necessary qualifications. They would then serve an additional two years and be evaluated under the current OER system. Those who leave the headquarters upon completion of a one-year SPOTLIGHT tour will have their follow-on assignment coordinated through HQ SAC/DPHDO (Career Development), HQ SAC/DPRO (Officer Assignments), and AFMPC.

Eligibility requirements for those interested in volunteering for the new SAC SPOTLIGHT program are:

Rated officers must:

- Have a minimum of three years rated service.
- Have performed at least two years of crew duty since initial graduation from CCTS.
- Be on active flying status occupying a combat crew position or air operations staff position at wing level.
- Have attained aircraft commander status if a pilot.
- Have attained radar navigator status if serving as a navigator in the B-52.

Missile officers must:

- Have a minimum of two years combat ready status in the weapon system to which currently assigned.
- Be currently on a combat crew or in an operational staff position. If on a combat crew, officer must have attained combat crew commander status.

Both rated and missile officers must:

- Be serving in the grade of captain.
- Be in regular or career reserve status.
- Must have a Total Active Federal Commissioned Service Date of not more than eight years as of 1 Oct of the fiscal year of desired entry. If serving overseas, have a DEROS within the fiscal year of desired entry.
- Have at least 24 months on station as of 1 Oct of the desired assignment year.
- Have completed Squadron Officers School either in residence or by correspondence.
- Have an outstanding record which indicates the potential for substantial career growth.
- Meet all eligibility criteria as of 1 Oct of the fiscal year of desired entry. No waivers are granted to any of the eligibility criteria. Although not mandatory, it is desirable that applicants have instructor status in their applicable weapon system.

SACR 36-5, which covers application procedures for SAC SPOTLIGHT, is currently under revision. Until the revision becomes effective, applicants should submit a volunteer letter to HQ SAC/DPHDO, Offutt AFB NE 68113. Guidelines for submission of the letter are:

- Paragraph 1 should contain a volunteer statement for SAC SPOTLIGHT.
- Paragraph 2 should include any qualifications the applicant may have which would make him a more qualified candidate for SPOTLIGHT. Only information that is not readily apparent from the individual's command selection folder should be included.
- Paragraph 3 should contain the applicant's deputate priority for assignment. Available choices include AC (Comptroller), AD (Data Automation), DO (Operations), DP (Personnel), IN (Intelligence), LG (Logistics), XO (Ops Plans), and XP (Plans). SPOTLIGHT selectees will be assigned based on their rank order as determined by the selection board.

Selection board proceedings are affected by the Privacy Act of 1974. Refer to SACR 36-5 for pertinent privacy act information.

All applicants must be indorsed by the officer's squadron commander/division chief, DO, and wing commander. The wing commander's indorsement will be the final indorsement.

Since the SPOTLIGHT selection board is tentatively scheduled to convene in the last week of July, applications must arrive at HQ SAC/DPHDO by 15 Jul 77. Officers who meet eligibility requirements and have already applied for the FY 78 program using guidelines in SACR 36-5, dated 7 Nov 75, need not reapply. Prior to meeting the selection board, all applicants will be reviewed by HQ SAC/DPRO/DPHD to insure that, if selected, the applicant can be assigned during October-November of the fiscal year of desired entry. If the applicant is not available for reassignment during this time period, he will not be considered for selection.

The selection board will be composed of experienced field grade officers. They will evaluate the "whole person" in the SPOTLIGHT selection process. The applicant's career progression, effectiveness reports, formal and professional military education, and letter of application will be considered. Those selected will receive notification and assignment instructions prior to the end of August.

All officers who meet the established criteria are encouraged to apply for this program designed to stimulate early career growth through exposure to MAJCOM management and functional activities.

BIG INSTRUMENT HOLDING

Captain John L. Wilson
1st Combat Evaluation Group
Barksdale AFB

Last month, this column discussed one method to determine the location of a "random" holding pattern. However, this is just the start of the holding pattern solution. Other considerations include entry turn, airspeed, pattern limits, and wind corrections. This article will cover some of the procedures and techniques that can be used to enter and fly a holding pattern. For a more complete discussion of this subject, you should refer to AFM 51-37, Chapter 5.

ENTRY TURN

Except for teardrop entries, the first turn after crossing the holding fix will be to a heading that is outbound from the fix and parallel to the inbound holding course. The direction of that turn can be determined very simply by using the HSI or other compass cards.

Look from the present aircraft heading the shortest direction to the inbound holding course (Figure 1). If the holding course is within 70 degrees of the present heading, the entry turn will be made in the direction of the holding pattern, i.e., right for a right hand pattern, left for a left hand pattern. If the holding course is more than 70 degrees from the aircraft heading, the entry turn is made in the shortest direction to the required outbound heading. Note that if this turn is opposite the pattern direction, you will be on the non-holding side. If you enter on the non-holding side, either fly parallel to the inbound course (adjust for wind) or attempt to intercept the holding course outbound. When on the non-holding side or any time the holding course is intercepted outbound, at the completion of the outbound leg, the turn inbound will be made toward the holding side of the pattern.

A teardrop entry to the holding pattern may be made when entering on a heading conveniently aligned with the selected teardrop course. The teardrop track is one that proceeds outbound at 45 degrees or less from the inbound holding course on the holding side. "Conveniently aligned" is generally when the selected teardrop course is within 45 degrees of the aircraft heading (Figure 2). This may vary with the situation (aircraft speed, winds, etc.). Since 45 degrees for the teardrop course and conveniently aligned is the maximum angle, you may actually want to use some smaller criteria for your conditions. The entry turns depicted on high altitude approach chart plan views, for instance, show teardrop entry when the aircraft heading is within 40 degrees of a 30 degree teardrop course. If course guidance is available for the teardrop course (VOR holding), an attempt should be made to intercept the course. If wind drift is known, it should be applied during the outbound leg when course guidance is not provided.

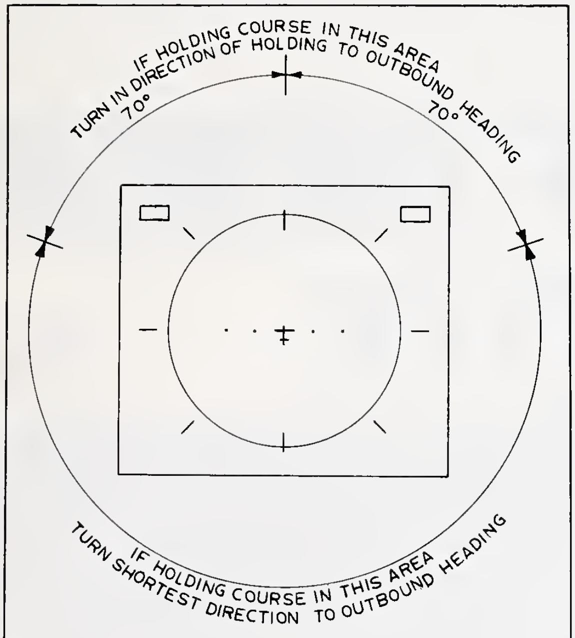

IF HOLDING COURSE IN THIS AREA
TURN IN DIRECTION OF HOLDING TO OUTBOUND HEADING
70°
70°
IF HOLDING COURSE IN THIS AREA
TURN SHORTEST DIRECTION TO OUTBOUND HEADING

FIG.1-ENTRY TURN

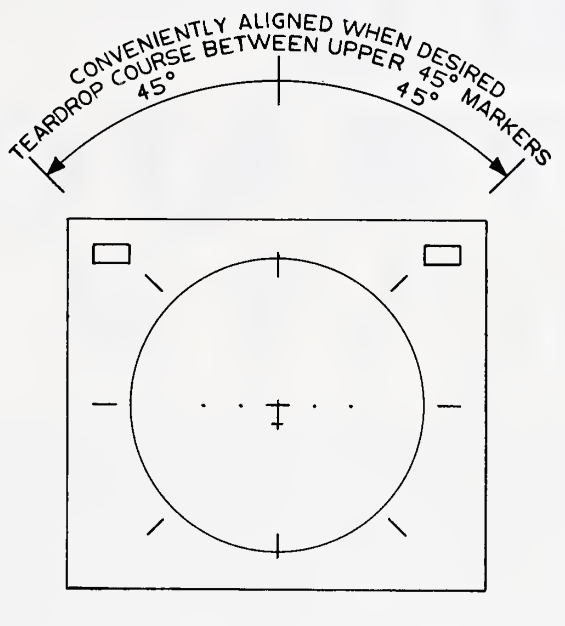

CONVENIENTLY ALIGNED WHEN DESIRED
TEARDROP COURSE BETWEEN UPPER 45° MARKERS
45°
45°

FIG.2-TEARDROP ENTRY

AIRSPEED

You should start reducing aircraft speed so as to cross the holding fix at or below the maximum holding airspeed for your aircraft. Refer to FLIP GP, Chapter 5, for the maximum holding airspeed. As a technique, plan on starting your airspeed reduction two to three minutes prior to the ETA at the fix. Announce this time to the crew so they can help monitor the airspeed reduction. If, due to aircraft weight or other reason, it is necessary to hold above the maximum holding airspeed for your aircraft, advise ATC.

PATTERN LIMITS

TACAN holding patterns normally specify the outer limit of the pattern with DME. When the DME is reached on the outbound leg, the turn toward the holding radial is initiated. For VOR holding patterns and TACAN patterns without a DME outer limit specified, timing is used to define the outer limit of the pattern.

The timing used applies to the inbound leg of the pattern, and except for the initial outbound leg, the outbound timing is adjusted to make good the required timing on the inbound leg. Above 14,000 feet MSL the inbound time is 1.5 minutes while at or below 14,000 feet the time is 1 minute.

WIND CORRECTIONS

A no wind holding pattern requires standard rate turns except when a standard rate turn requires more than 30 degrees bank, in which case 30 degree bank turns are used. To compensate for wind it may be desirable to adjust the bank angle by the amount of drift. When turning into the wind, reduce the bank by the number of degrees of drift. When turning with the wind, increase the bank by the amount of drift. However, the bank is never increased over 30 degrees or reduced below 15 degrees or that required for a half standard rate turn whichever is less.

During the outbound leg, apply the drift correction to the no wind outbound heading. Since SAC aircraft are usually at a high enough TAS where 30 degrees bank is less than a standard rate turn, it is usually not possible to apply bank correction when turning with the wind. Compensate by applying double the drift on the outbound leg and reducing the bank when turning into the wind. If you do wish to use any bank corrections, use triple drift corrections for the outbound leg with 30° bank turns.

Holding patterns are not difficult, provided you allow yourself sufficient time to get set up. Use your crew to check the procedures you intend to use and to back you up. But you must coordinate with them and insure they understand your intentions. A little study and practice in the trainer or in the air will ease your panic next time you receive an unexpected clearance to hold.

OLD STRATOFREIGH NEVER DIE . . . Par

TERS

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Editor's note. This is the first of a two-part series about the Stratofreighter and its contribution to the history of airpower.

Major John R. Dockendorff
HQ SAC Offutt AFB

"RPM-2350, Manifold — 34, Jets — 70%." Some of you jet jocks may never have heard words like these but surely there are still a few of us around who recognize this as KC-97 interphone conversation. However, if you flew the old "97" prior to 1965, that reference to "jets" may have thrown you, but more about that later. With RPM, manifold pressure, brake hp, cowl flaps, cylinder head temp, carburetor air temp, etc., the old prop airplanes have a language all their own. The above pilot-to-engineer commands from the before landing checklist are only heard today by a shrinking number of ANG crews. The venerable old "bug smasher" is finally ready for retirement after 26 years of service with SAC and TAC-gained ANG units. Judging by the number of retirements among the senior SAC staff (CINC, VCINC, and DO), 1977 must be a good year to quit while you're ahead so the old "Stratofreighter" will be in good company.

It all started with SAC and now will end with SAC via the SAC-gained ANG units. Most of these are now converting to the KC-135. As of 1 July 1976 SAC became gaining command for all KC-97 ANG units and, once again, all USAF tankers are under SAC operational control.

Anyone not ready for a little dose of SAC history/nostalgia may turn to another article. All you ACEs who think that a T-38 makes the only exciting airplane sound probably have been deprived of the chance to hear a 3500 horsepower, R4360 with a 16½-foot diameter "turbo fan" roar into life on a frigid morning at Goose Bay. (OK, so a turbo-supercharged water-injected 28-cylinder radial with a 16½-foot, 4-blade prop is not exactly a turbo-fan — you, too, may turn to another article.)

Some of you may not believe that many pilots have flown the '97 for years and have never touched the throttles except to put the props in reverse pitch after landing. The flight engineers won't let you for fear you might overspeed or overboost their precious engines. Normally, the pilot calls for all power settings on the interphone. This sounds strange to the unfamiliar but at least one of the reasons for it is that the ailerons are so heavy most pilots need both hands on the yoke — especially in crosswind conditions. Even CEVG (formerly CEG) bought this procedure in later years. (Those of you who **still** don't believe in props may now turn the page.)

It all began about 30 years ago . . .

The refueling business was pioneered by the tanker version of the B-29 and its cousin the B-50 modified to the KC-50 in the late 1940s. The flying boom was developed for the KB-29 while the KC-50s refueled up to three fighters simultaneously with pod and tail mounted hose reels. The KC-97 was the tanker version of the C-97/Boeing 377 Stratocruiser which first flew in 1944. It used the boom system which provides faster transfer rates. The C-97 flew for several years as a long range transport for USAF and its Model 377 counterpart for commercial airlines including hauling over one million pounds of freight during the 1949 Berlin Airlift.

SAC needed a way to extend the range of its new all-jet B-47 bomber so the KC-97A prototype was revealed in December 1950. SAC took delivery on the first KC-97 in July 1951. Deliveries of both C-97s to MAC (then MATS) and KC-97s to SAC continued until November 1956 when the last KC-97G of the 888 total '97s built was delivered to SAC. Overall, the '97 has a pretty good safety record but the early record of the KC-97 was not so good.

In those early days of large airplane technology most of the troubles centered around the engines. The R4360 is the largest reciprocating aircraft engine ever built and perhaps also the most complex. Each engine has four magnetos, 56 coils and 28 cylinders with two spark plugs each. This means that a "tune-up" for a '97 involves 224 spark plugs, 224 coil checks, 16 mag timings, and many other systems checks, such as oil coolers, carb air doors, cowl flaps, synchronizers, etc., etc.

The power required to carry enough fuel and stay in front of the B-47 taxed the capability of the airplane. The YC-97 was originally designed for 120,000 pound max takeoff gross weight. This was increased to 175,000 pounds when the engines were upgraded to the Dash 59, 3500-hp version, and mission requirements for the tanker called for maximum fuel loads. The bigger engines helped, but the increased weight resulted in overall reduced performance. Crews just "firewalled" the throttles and hoped for the best. Due to the high power requirements of heavyweight takeoffs and maximum performance refueling, engine failures were common, and if they occurred on takeoff, little or no margin of safety was available. One pilot commented, "If you lost an engine on takeoff, you had better hope there was nothing higher than a barbed wire fence for at least ten miles in front of you." The time between overhaul/failure for the big engines hit a low of 150 hours in the mid-fifties and never did get much better than 500-600 hours even after many engineering changes and mods. One result of this was that in the first ten years, the '97 had 90 major accidents for a rate of 3.54 per 100,000 hours. For comparison, the 1976 rate for the KC-135 was 1.0.

In addition to the engine problems, heavy gross weight operations including the new requirement — ground alert — caused a rash of wheel failures. The problem was finally solved with modified B-47 and B-36 wheels. The maximum gross weight of the airplane would probably have been increased even more over the years, if not for the fact that 175,000 pounds was the limit the landing gear axles could bear. Any increase would have required a complete gear redesign. This limit may have prevented an even poorer accident rate.

The old '97 contributed to many records and new concepts in weapon deployment. Whole wings of B-47s were regularly "reflexed" between US and Europe and Africa with '97 support. In November of 1954 a unique record was set by a B-47 which took off from French Morocco bound for England. Bad weather developed at all suitable B-47 bases so the crew stayed aloft — with the help of nine refuelings — for 47 hours, 35 minutes, until the weather cleared.

After the first B-52 was delivered to SAC in mid-1955, many new world records for time and distance flights were set with the help of the KC-97. One example occurred in 1956. Four B-52s flew nonstop around the perimeter of North America in 31½ hours. The flight would not have been possible without four air refuelings. Mission planners estimated that the new KC-135, then in development, could have reduced the time required by some three hours. The KC-97 was only marginally compatible with an all-jet bomber fleet, so everybody said the end was near for the KC-97. The delivery of the last KC-97 and the last B-47 in 1956 was seen as the beginning of the end of an era.

Shortly after delivery of the KC-135 started in 1957, three B-52s flew around the world in the record time of 45 hours, 19 minutes, still using KC-97 support. Again, planners estimated 4-5 hours could have been saved if more of the new KC-135s were available. When the first ANG units (Chicago IL and Milwaukee WI) converted to KC-97s in July 1961, SAC still had 651 of them in service. The phase-out of the entire SAC fleet, which once consisted of 780 airplanes, was not completed until late 1965.

In 1964 an interesting development occurred in the career of the KC-97 which promised to extend its useful life many years. Someone in the Air Force resurrected the idea to install two surplus J-47 jet engines to add more power which would permit refueling at higher airspeeds and altitudes. The concept was first used on some of the KB-50s and it was found that the J-47 engine pylon/pod arrangement used on the KB-50 would fit the underwing aux fuel tank mount already on the KC-97.

An Illinois ANG KC-97(G) was modified and designated KC-97(L). The unit then flew a series of operational flight tests. The results were impressive:

—Refueling altitude increased 10,000 feet over that of a G model at any weight.

—Indicated airspeed increased 60 kts over a G model at any weight.

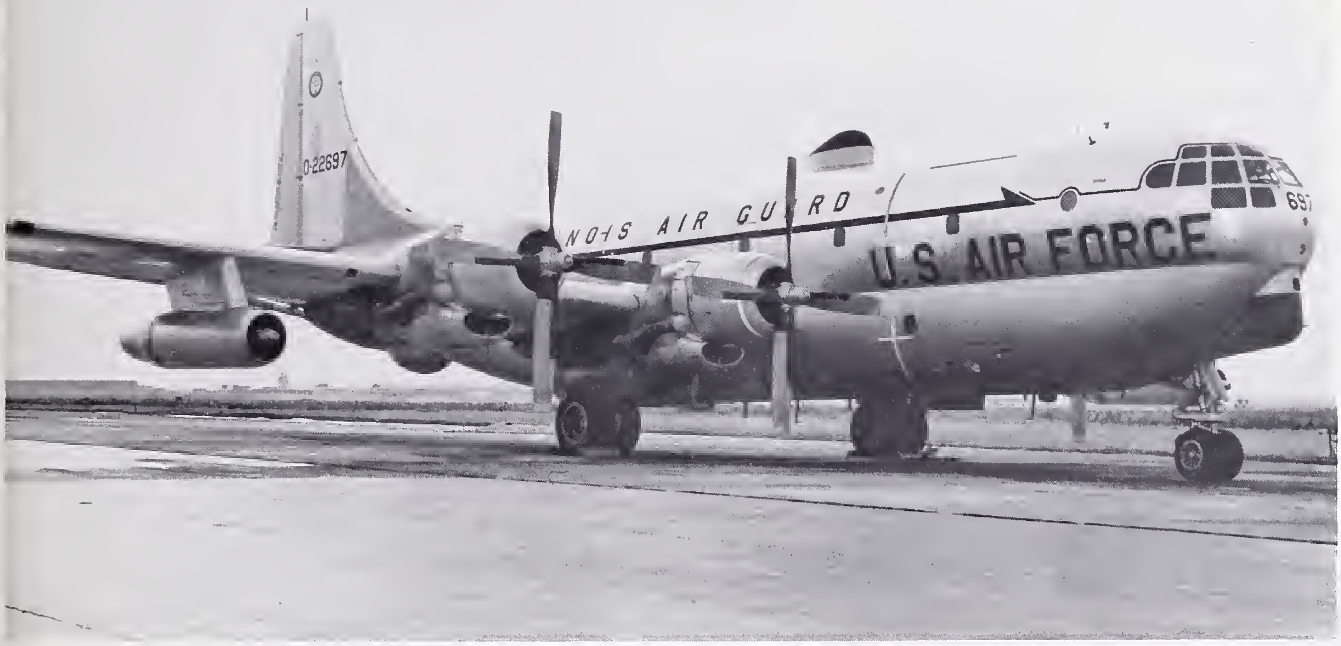
—Takeoff ground run was reduced about 50%.

—Climb to 20,000 feet, at high gross weight, took 17 minutes compared to over an hour for the G model.

—Most important were the safety benefits which resulted from demanding less time at high power from the recip engines and the performance margin which remained even after failure of one of the recips.

The old '97 suddenly had a whole new personality. It could now refuel above 20,000 feet with enough speed for every fighter in the USAF inventory. TAC and other fighter commands were delighted since most of the newer fighters had A/R capability, but getting training for the fighter pilots was difficult. The only tanker fast enough for them had been the KC-135 but SAC mission requirements limited tanker availability.

This new hot-rod-like performance for the old '97 was to be a source of wonder among many pilots for years to come. At light gross weights it would outclimb a T-bird (T-33 for you youngsters) and former '97 drivers had trouble adjusting to the deck angles associated with the 3000-4000



In 1964 the Old '97 suddenly had a whole new personality with the addition of two J-47 jet engines.

ft/min climb that the old girl could now safely perform.

Curiosity got the best of one crew (from a unit which shall remain nameless) on the way home from a practice refueling. They were confident the bird would fly on the jets alone so they feathered three props, left one running at zero thrust, and cruised around happily as the first all jet '97. Quite an unusual sight! They were correct — the airplane flew well — that is until they were ready to return to home base and tried to restart the recip engines. As they were cruising around (over an undercast), the generator on the one engine left running for that purpose, failed. Since there are no generators on the jets they were now in a bit of a bind. There was no AC power for the flight instruments and the battery had insufficient power to run the aux oil pump needed to unfeather the props to allow them to windmill. In those days the APU was wired so that it would not start unless there was weight on the landing gear, so it was no help. What do we do now, coach? After much head scratching they decided they had no choice but to crank the gear down by hand and plan to return home for landing with no flaps, no reverse, and limited braking. They finally found a hole in the undercast, landed a little hot and came to a stop on the overrun about 30 feet from the ILS antenna. They made it — and narrowly escaped court martial proceedings.

Some of the features of the old '97 have always been somewhat embarrassing to crews. After some brake and wheel problems in the 1950s, the '97s were equipped with modified B-47 "expander tube" brakes. These have a metallic lining and make a God-awful squealing noise when applied during taxi. You can hear a '97 all over your end of town and this is always good for some smart comments from observers about "mating elephants," etc.

Another embarrassment is the fact that the R-4360 engine uses a lot of oil — especially during taxi. On long flights an extra 55-gal drum is carried to supplement the 186-gal built-in supply. This is 241 gallons folks, plus 12 gallons for the jets. During taxi on a calm day it lays a beautiful smoke screen to control local mosquito problems. One day, about four years ago, the author landed a KC-97 at Offutt AFB for a passenger stop. As we taxied in, a young tower operator very seriously advised us that our airplane was "smoking heavily." Our reply, "Everything is OK because the plane is over 21" was answered with heavy silence. — Back to history — (To be continued.)

OLYMPIC ARENA 77 PHOTO VIEW

(Top) A1C Michael A. Dermes (L) and Sgt Wilmer E. Witkip, 308th Communications Team, bench-check circuits on Titan II communications equipment. (Center) Commanders of the nine competing missile wings prepare to draw envelopes containing competition schedules. (L-R) Colonels J. L. Church, 321st SMW, G. E. McIlmoyle, 341st SMW, R. E. Colclazier, vice commander, 91st SMW; D. F. Gaylor, 381st SMW; J. E. Cowan, 90th SMW; J. C. Faurer, 44th SMW; J. P. Morgan, 308th SMW; G. Holt, Jr., 390th SMW; C. D. Cork, 351st SMW; (left) Sgt Darwin R. Hyde, (L), and Mr. Robert J. Raqsdale of the 381st Civil Engineering Team, reassemble a Titan II launch facility water chiller/compressor as evaluator TSgt Thomas E. Cade looks on.

(Top L) SrA Paul Gonzales (L) and A1C Arthur Schultz, 321st C. E. Team, service electrodialysis water filtration unit as evaluator TSgt Charles Hightower scores the exercise. (Top R) Sgt Curtis Vosika (rear) and A1C Rex McDowell of the 381st SMW, trouble-shoot a standby power unit. (Below L) 380th Missile Maintenance Team SSgt Fred Stanton and SrA Dennis Case are evaluated by TSgt David Turkali of the 3901st SME Quadron. (Right) TSgt Paul Vandenberg, 91st Munitions Team working on Mark 12 Re-entry Vehicle.

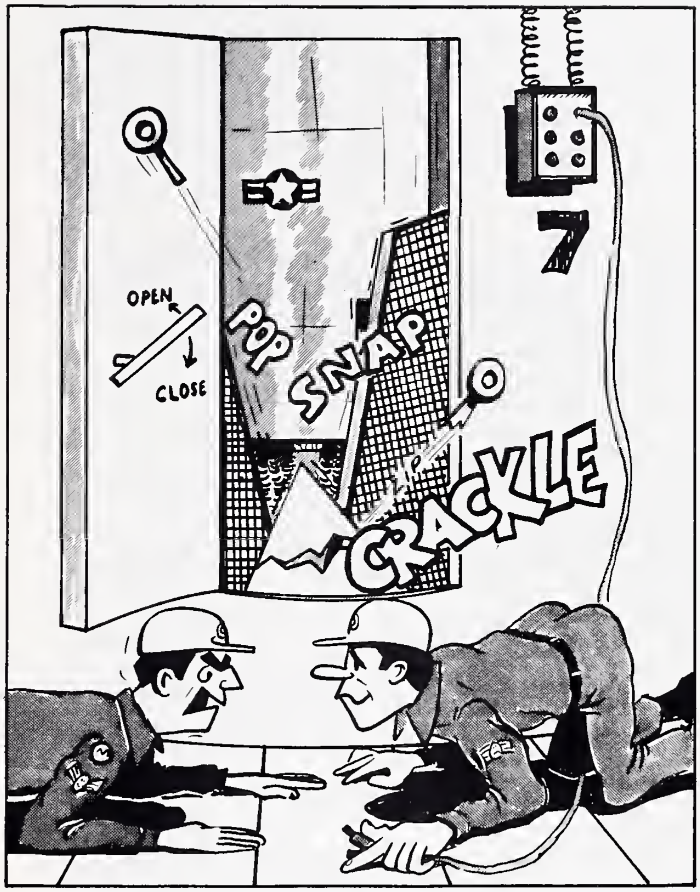
missile mishaps

SAFING PINS? WOULD YOU BELIEVE A NEW LOADING PROCEDURE, SIR?

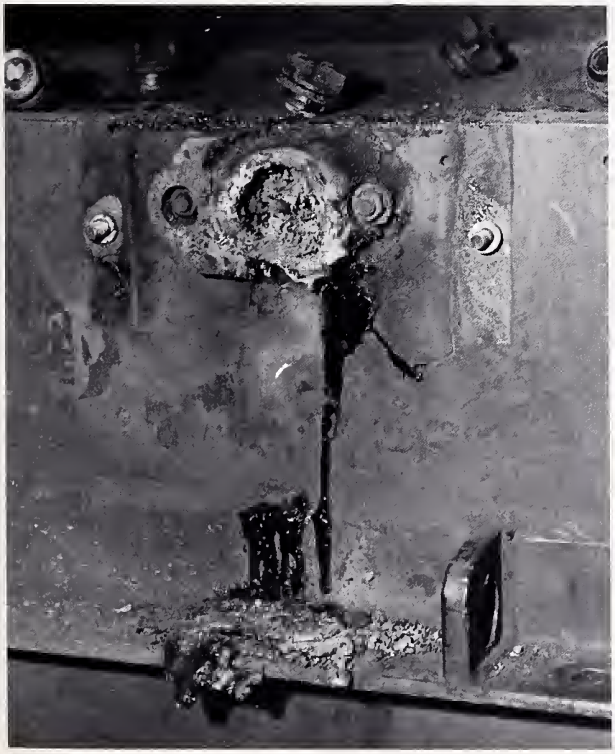
QUICK RELEASE PINS Two SRAM missiles with Simulated Launch Training Payloads (SLTP) had been downloaded from an FB-111 and returned to the weapons storage area. The next morning a maintenance team discovered the plastic top portion of the missile insert assembly umbilical connector was missing. A search was conducted and the missile portion was found on the aircraft umbilical. The investigation revealed that the missile download task had been interrupted by the shift supervisor to move a stalled truck from the area. After resuming the task, the team chief failed to review the checklist to determine the correct starting place. The missile was then downloaded from the aircraft without separating the quick release pins in the restraint brackets. The cost of this mishap was over $6,000.00 and there is not much doubt about the cause — personnel error.

STORY WITH A MORAL

A TITAN II propellant transfer system team had completed an oxidizer gask-o-seal change. While part of the team was working topside, two team members went downstairs to raise the level 7 work platforms. The two technicians reported to the control center and received the maintenance and silo entry briefings, tools, and tech data. They proceeded to level 7, and without reference to tech data, proceeded to raise the launch duct work platforms. The platforms were about half-way retracted before the maintenance team realized that the platform cover plates had not been folded back. But it was too late. Several work platform cover plates were damaged and the thrust mount bottle solenoid had to be replaced. Moral: Do not rely on memory to accomplish tech data procedures.



AND ALL YOU'VE GOT TO SAY IS IT SOUNDS LIKE A RICE KRUNCHIES COMMERCIAL!!



SHORT CIRCUITS

A missile combat crew at a MINUTEMAN launch control center heard a hissing noise and observed black smoke coming from the floor panels in the area of the LCC battery bank. The crew shutdown the LCC and evacuated. Shortly thereafter, a series of four explosions were heard. Subsequent investigation revealed short circuits caused by internal corrosion resulted in battery damage to eight batteries. The internal corrosion was caused by a combination of battery design and inadequate servicing procedures. A battery replacement program was initiated and servicing procedures improved.

Combat Crew is distributed on the basis of one copy per 10 individuals. Please pass it on. Our CINC gives his copy to his grandson.

NIGHT RESCUE . . .

Continued from page 11

the survival radio are especially crucial in successful night operations.

You should also be able to locate and operate your equipment in the dark without the aid of a light. The strobe light presents few problems (it's either on or off), but when was the last time you practiced changing modes or frequencies on your survival radio by feel alone?

Of course, you must also listen to the briefings and follow the instructions of the helicopter crew. They'll be asking you for information concerning your condition and surrounding terrain and, based on your responses, will modify their tactics to expedite your recovery as much as possible.

ARRS is presently in the process of further upgrading its HH-53C NRS with the development of PAVE LOW III.

Additional equipment installed on the HH-53C includes terrain following/terrain avoidance radar, a Doppler-inertial navigation system, a projected map display, a Forward Looking Infrared (FLIR) electro-optical sensor, an improved ELF, and a hover coupler. All of these systems are interfaced with a central avionics computer to provide flexibility and backup capability. Operational testing and evaluation is complete on one prototype and ARRS expects PAVE LOW III to be operational in late 1979.

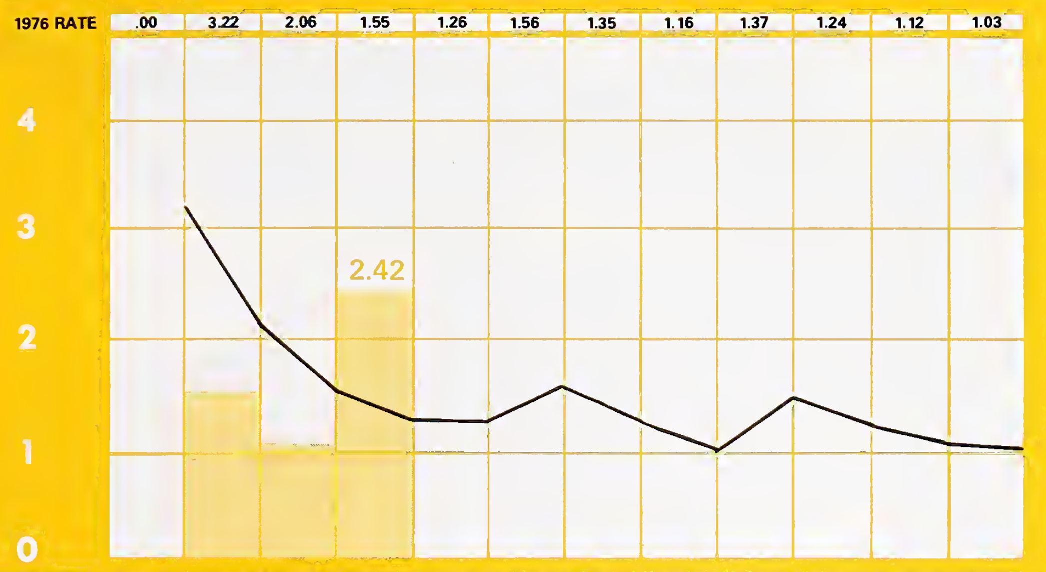
Rescue's experiences indicate that a fully operational night/adverse weather rescue system is essential to the future of combat SAR. PAVE LOW III will provide ARRS with that capability.

ABOUT THE AUTHOR

Capt Donald R. Backlund was commissioned in 1971 following graduation from the United States Air Force Academy. Following an assignment to Indiana University to obtain a Master's Degree in History, Capt Backlund entered helicopter training and received his wings in October, 1972. After transition training in the HH-53C, he reported to the 40 ARRS at Nakhon Phanom RTAFB, Thailand for a two year tour. At the time of his departure from the 40 ARRS, in June 1975, he was the Chief of the Squadron Standardization Branch. Capt Backlund is currently a Flight Examiner in the 1551 Flying Training Squadron, flying the HH-53C. Decorations include the Air Force Cross. Air Medal with one OLC, and the Air Force Commendation Medal.

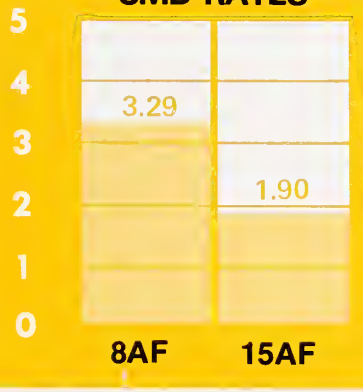
1977 Flying Safety Rate

SAC MAJOR ACCIDENT RATE (PER 100,000 FLYING HRS)



ACCIDENTS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1976	0	2	0	0	0	1	0	0	1	0	0	0
1977	0	1	0	2								

1977 SUBORDINATE CMD RATES

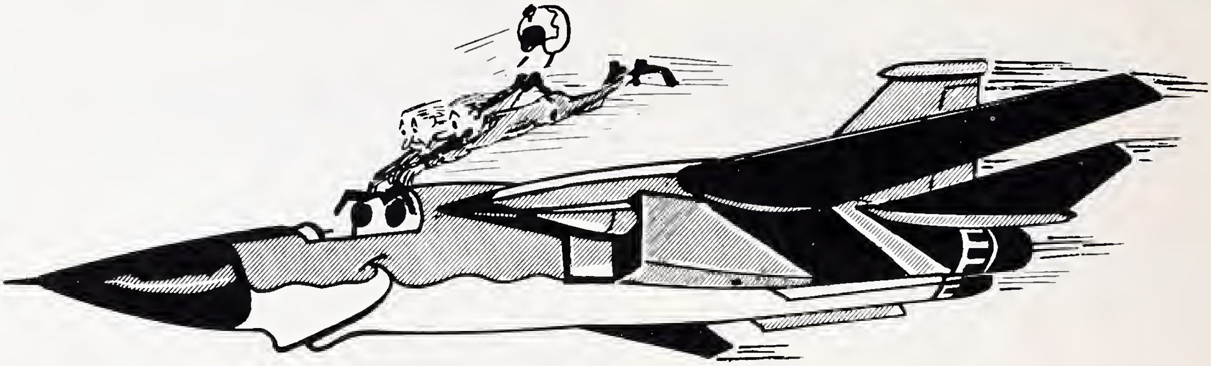


ACCIDENT STATUS

FB-111	FEB 77
B-52	APR 77
KC-135	APR 77

LEGEND ⌃ =1976 RATE

OPS HAZARDS



COME ON GEORGE, STOP KIDDING AROUND!!

DO YOU TRUST YOUR AUTOPILOT? Did you know your autopilot may have a mind of its own? During a normal training mission the aircraft was in a 30 degree turn using low level mode of the autopilot in VFR conditions at 3000 ft MSL and 325 KIAS. When the yoke was turned to rollout, the yoke would not move. Autopilot release button was depressed, autopilot master switch turned to off and servos switch pulled in an effort to get the autopilot to release. The low level mode switch disengaged, however, the servos engaged switch stayed engaged. Finally, pressing on the servos switch for several seconds caused the servo switch to disengage and allowed the pilot to gain control of the aircraft. Autopilot was tried in altitude hold mode at high altitude (FL 370). It worked fine; however, when the crew tried to disengage the autopilot, the same problem occurred. This time though, as long as the autopilot release button was held in, aircraft control could be obtained until the servos switch was forced to disengage. Even though this crew was at low level high speed at initial occurence they were able to gain control of the aircraft before a dangerous or uncontrollable situation occurred. Could your autopilot get away from you?

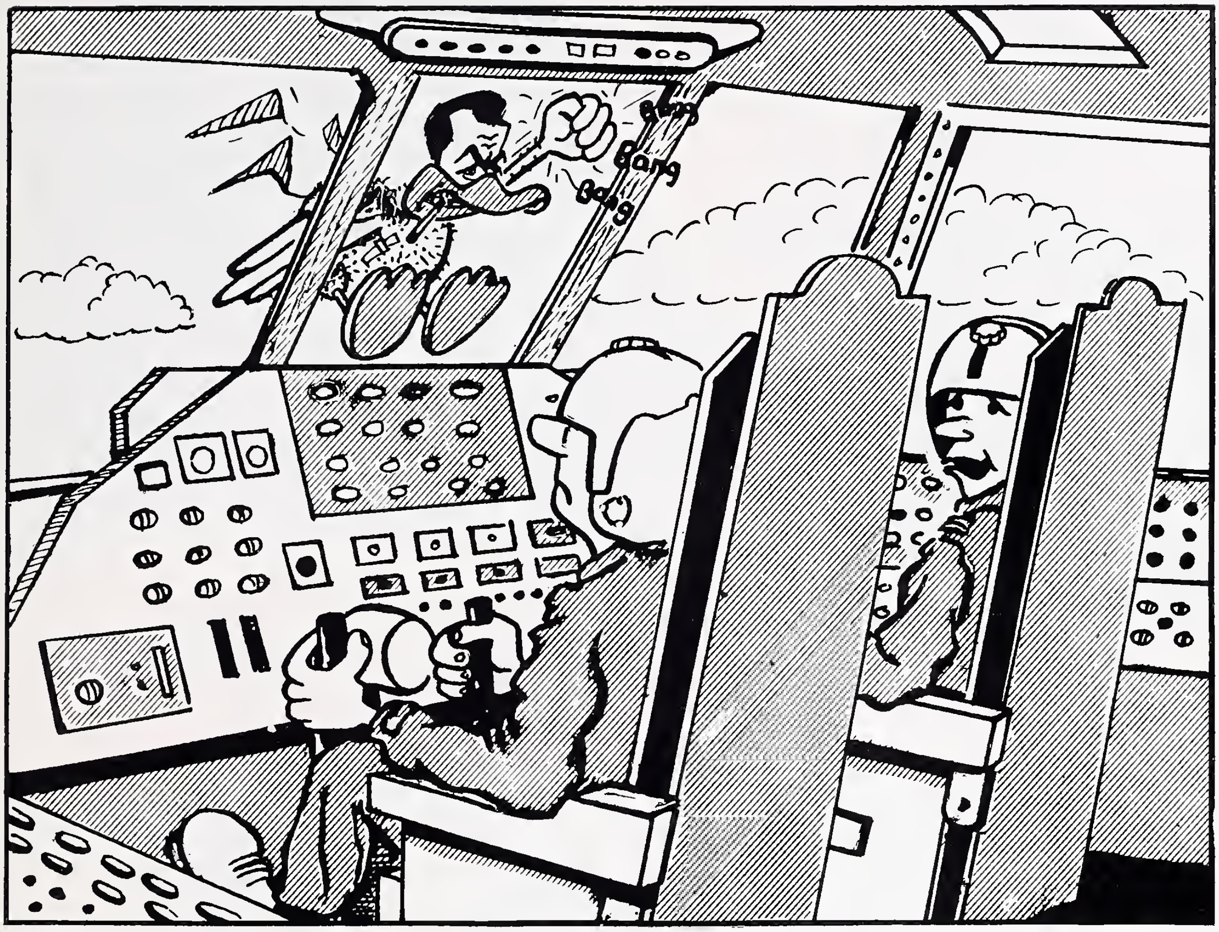
BREAKAWAY IN COMMUNICATIONS The mission was a typical 51-135 training mission — air refueling with a B-52 followed by a nav leg. The rendezvous was completed and the first contact was made in tanker manual. During the first contact, as the receiver approached a right aft limit, the boom operator suspected the boom was binding. To accomplish a clean disconnect he requested that the receiver disconnect at the same time he initiated a disconnect. The separation was clean with no difficulty noted. After a 19,000 pound offload a second contact was attempted in normal. The nozzle engaged the receptacle but no advance to contact made was noted. An immediate disconnect was attempted but instead of advancing to disconnect, the system remained in ready. The receiver was notified of no contact made and to effect a disconnect but there was no response from the receiver. A second radio call was made to effect a disconnect, but still no response. The boom operator queried the receiver and asked if the -52 was receiving his transmissions. Still no response from the receiver aircraft. At this time the receiver began moving forward rapidly and at approximately eight feet extension — 28 degrees elevation, a breakaway was initiated. The receiver took the boom to the stops — backing on centerline and 32 degrees elevation. A brute force disconnect occurred.

No discrepancies could be discovered in either the bomber or tanker refueling systems during postflight inspection.

Investigation revealed the bomber was receiving the boom operator's transmissions and was attempting a disconnect at the time of breakaway.

The key problem here was a breakdown in communications. The receiver pilot knew what was going on but the tanker crew did not.

Two way communication is essential in any refueling operation. Both crews must insure an open path of communication exists and that rapid responses occur between aircraft. This incident also emphasizes the importance of crew discipline (interphone conversation) during refueling. An inter aircraft transmission blocked by needless cockpit chatter could have serious repercussions.



I DON'T KNOW ABOUT YOU, BUT THAT DUCK LOOKS AWFULLY FAMILIAR!

RUN IT UP AGAIN, SAM

At approximately 300 feet AGL, during initial departure on a B-52 training mission, both pilots saw a bright flash on the right side of the aircraft. Immediately thereafter, the number six engine began to backfire, as in a compressor stall, and vibrations were felt throughout the aircraft. The number six EPR fluctuated slightly but all other engine indications remained normal. The throttle was retarded to idle and the backfiring ceased. During climb, the number six throttle was advanced slowly to determine the extent of the problem. At approximately 90% rpm the compressor stall vibrations were felt and the copilot noticed flames coming from the engine. The throttle was retarded to idle and again the flames and vibrations ceased. The command post was notified and the decision was made to continue the mission. The engine remained in idle until air refueling. During A/R the throttle was advanced so that the tanker boom operator could make a visual check of the engine. As the throttle was advanced to approximately 80% rpm, the engine began to backfire and the boom operator noticed flames coming from the rear of the engine. The throttle was returned to idle and remained in idle for the remainder of the flight. The aircraft landed without further difficulty. During postflight, a large blood smear was found on the right side of the number six engine nose dome, and the first several stages of rotor blades appeared to be badly damaged indicating that a bird had been ingested into the engine.

Had the pilot run the engine up one more time, he could have caused a catastrophic engine failure and destroyed the aircraft. Every pilot knows that engine instruments are not infallible in determining whether or not the engine is operating normally. There have been many instances where engine instruments did not indicate actual engine damage. This is one reason why an engine is shut down after a fire light even though engine instruments indicate normal operation. In this case, definite engine problems were noted three times and still the engine was not shut down, even though it was not essential for safe flight.

Leave maintenance troubleshooting of an erratic engine to the specialists. Follow your flight manual procedures. There is no substitute for good judgment.

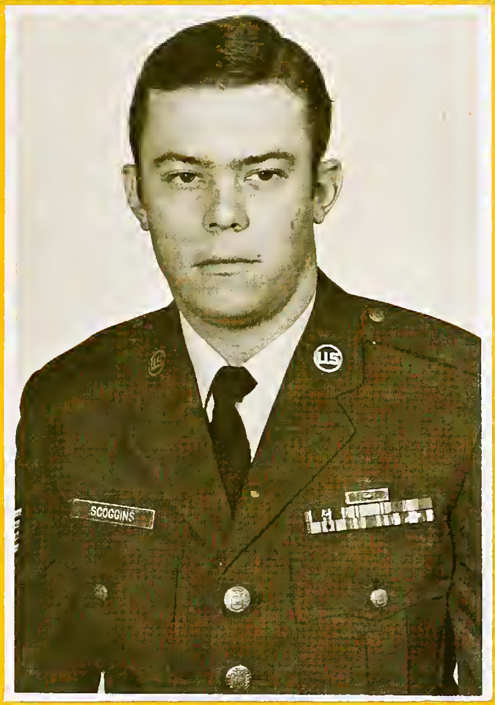
PROFESSIONAL PERFORMERS

Individuals selected for these pages as SAC's top professional performers of the month are chosen from nominations made by all SAC units. Selection is made only after all nominations have been carefully screened and those chosen meet the highest standards of excellence outlined in SACR 127- 2.

The 15th Air Force best "Bomber Crew of the Year" poses in front of a B-52 on the Mather AFB flight line. The 320 BMW crew received the Major General Charles M. Eisenhart Award for the "Bomber Crew of the Year." Crew members are (L to R): Capt Dennis Graham, EWO; Capt Donald Benson, P; Capt Robert Maddox, CP; and TSgt Robert L. Williams, G. Additional crew members not shown are Capt Frank Greenwood, RN, and Capt Jay M. Tappan, N.

FLYING CREW. 596 Bomb Sq Crew E-58, Barksdale AFB: (L-R) EW 1Lt Paul L. Attwood, CP Capt George D. Howell, P William S. Morgan, RN Capt Larry N. Hyland, G SSgt Paul J. Young, N 1Lt Ben L. Sinor.

MINUTEMAN Crew E-086, 91 SMW, Minot AFB: MCCC Capt James L. Smith, and DMCCC 1Lt Glenn D. Wright.



MAINTENANCE MAN. Staff Sergeant Ted M. Scoggins, Jr., 379 Organizational Maintenance Sq, Wurtsmith AFB.

TITAN Crew R-131, 390 SMW, Davis-Monthan AFB: MCCC Capt Richard I. Moore, DMCCC 2Lt Michael E. Grove, BMAT A1C Michael J. Nemeyer, BMFT A1C James M. Asaro.

HALL OF FAME

TACTICAL FLYING

OVER TWENTY-ONE YEARS

170 AREFG, McGuire (NJANG)	NONE

OVER NINETEEN YEARS

171 AREFW, Greater Pittsburgh (PAANG)	Mar '58

OVER EIGHTEEN YEARS

157 AREFG, Pease (NHANG)	Jun '58
97 BMW, Blytheville	Aug '58
940 AREFG, Mather (USAFR)	May '59

OVER SEVENTEEN YEARS

916 AREFS, Travis	Sep '59

OVER SIXTEEN YEARS

19 BMW, Robins	Oct '60
151 AREFG, Salt Lake City (UTANG)	Feb '61
161 AREFG, Sky Harbor (AZANG)	Apr '61
126 AREFW, Chicago O'Hare (ILANG)	Apr '61

OVER FIFTEEN YEARS

134 AREFG, McGhee Tyson (TNANG)	Aug '61
11 AREFS, Altus	Feb '62

OVER FOURTEEN YEARS

301 AREFW, Rickenbacker	Jul '62
96 BMW, Dyess	Aug '62
449 BMW, Kincheloe	Aug '62

OVER TWELVE YEARS

160 AREFG, Rickenbacker (OHANG)	Dec '64

OVER ELEVEN YEARS

136 AREFW, Dallas NAS (TXANG)	Jun '65
320 BMW, Mather	Jul '65

OVER TEN YEARS

452 AREFW, March (USAFR)	Sep '66
92 BMW, Fairchild	Feb '67

OVER NINE YEARS

55 SRW, Offutt	Jul '67
2 BMW, Barksdale	Aug '67
319 BMW, Grand Forks	Dec '67
22 BMW, March	Feb '68

OVER EIGHT YEARS

128 AREFG, Gen Mitchell (WIANG)	Jan '69
5 BMW, Minot	Feb '69

OVER SEVEN YEARS

42 BMW, Loring	Sep '69
141 AREFW, Fairchild (WAANG)	Oct '69
28 BMW, Ellsworth	May '70

OVER FIVE YEARS

7 BMW, Carswell	Mar '72
101 AREFW, Bangor (MEANG)	Mar '72
416 BMW, Griffiss	May '72

OVER FOUR YEARS

305 AREFW, Grissom	Aug '72
376 SW, Kadena	Nov '72
379 BMW, Wurtsmith	Apr '73

ICBM

OVER THIRTEEN YEARS

381 SMW, McConnell	Nov '63

OVER TWELVE YEARS

90 SMW, F E Warren	Jul '64
1 STRAD, Vandenberg	Sep '64

OVER ELEVEN YEARS

308 SMW, Little Rock	Aug '65

OVER SEVEN YEARS

341 SMW, Malmstrom	Apr '70

To gain listing in the Hall of Fame, a SAC or ARF unit must be mishap-free for 48 months.

SAC SAFETY SCREEN

5 BMW, Minot Crew E-123: P Capt Richard M Orkin, CP Capt Earnest D Blair, NN 1Lt Charles D Augustine, BO SSgt Peter Mueller

28 BMW, Ellsworth Crew R-18: P Capt James E Nickel, CP Capt Mark E Rogers, RN Capt David G Froves, NN Capt Stephen D Guinter, EW Capt David W Houde, AG SSgt Gelvin S Nicely Jr

42 BMW, Loring Crew R-12: P Capt John B Harper, CP Capt Paul M Augenstein, RN Capt Raumond F Bourgoin, N Capt Douglas W Butler, EWO 2Lt Michael A Smolin, G Sgt Jimmy G Stewart

90 SMW, F E Warren Crew S-119: MCCC Capt William H Stafford, DMCCC 1Lt Andrew E Randles

92 BMW, Fairchild Crew E-21: P Capt Kieth W. Barngrover, CP Capt Regan D Hulbert, RN Capt Robert L Andrews Jr, NN 1Lt Roger W Cox, EW Capt Carl E Anderson, AG SrA Gene A Griffin

93 BMW, Castle Crew S-163: IPU Capt George C Mazzeo, IPU Capt John E Holderman, IN Capt Charles S Romes, IBO MSgt Robert E Labo

319 BMW, Grand Forks Crew R-107: P Capt Kenneth C Carlson Jr, CP 1Lt Terry L Schultz, NN 1Lt Kerris L Wright, BO A1C Tomas W Schoenike

321 SMW, Grand Forks Crew S-049: MCCC Maj Jerry E Brown, DMCCC 1Lt Richard D Wilson

341 SMW, Malmstrom Crew R-022: MCCC Capt Grinnell Jones III, DMCCC 2Lt Dean P Conaway

410 BMW, K I Sawyer Crew E-20: AC Capt Kermit M Wright, CP 1Lt Kermit V Boschert, RN Capt David L Oles, N 1Lt Richard B Wallace, EWO 1Lt Richard Patmos, G SrA Darrell A Brinkley

410 BMW, K I Sawyer Crew E-120: AC Capt Robert D Hance, CP 1Lt Warren B Delker, N 1Lt Harold D Wagner Jr, BO Sgt Donald O Frol

416 BMW, Griffiss Crew E-112: FP Capt Jim L Avramovich, CP 1Lt William C Mahaffy, NN Capt Anthony Novelino, BO TSgt Raymond E Aguayo

416 BMW, Griffiss Crew S-03: IP Capt Dennis E Doucet, CP Capt Robert C May, IRN Capt Gerald L Kasten, IN 1Lt Peter W Kippie, IEW Capt John S Hannah, IS SSgt Dana J Quackenbush

509 BMW, Pease Crew S-35: IP Capt George B Watts, IN Capt William M Harris

The SAC Safety Screen is an honor roll of SAC's most professional crews. To gain listing on the Screen, crew members must be nominated by their unit commanders and meet high selection criteria of experience in their aircraft or missile system *IAW SACR 127-2*.

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FLARE

WHITEMAN AFB . . . Lt Col Earl J. Farney, Lt Col Wayne Bithill and CMSgt Ben Hines, representing the 351st SMW, carry the Blanchard Trophy home. The Whiteman competitors and staff returned home after winning the trophy in the 1977 Olympic Arena competition. This year makes the third time Whitemanites have captured the Blanchard — an unprecedented achievement in Olympic Arena history.